SCIENTIFIC COUNCIL INTERSESSIONAL AND PRECAUTIONARY APPROACH WORKING GROUP MEETING 5 DECEMBER 2024

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REPORT OF SCIENTIFIC COUNCIL INTERSESSIONAL AND PRECAUTIONARY APPROACH WORKING GROUP (PA-WG)

5 December 2024

Chair: Diana González-Troncoso and Fernando González-Costas

Rapporteur: NAFO Secretariat

1. Opening

The meeting was opened by the Scientific Council Chair, Diana González-Troncoso (European Union) and PA-WG Chair, Fernando González-Costas (European Union), at 09:02 hours (UTC/GMT -4 hours) on Thursday, 5 December 2024.

The Chairs welcomed representatives from Canada, Denmark (in respect of the Faroe Islands and Greenland), the European Union, Japan, the United Kingdom and the United States of America. There was also an observer from the Sargasso Sea Commission in attendance. A full participants list is presented in Appendix I.

a) Appointment of Rapporteur

The NAFO Secretariat was appointed rapporteur.

b) Adoption of Agenda

The Scientific Council Chair added an item on the Climate Change Consultancy under agenda item 6, Other Matters. The agenda was adopted as outlined in Appendix II.

2. Current situation of NAFO stocks in relation to the Reference Points of the new Precautionary Approach Framework.

The PA-WG Chair, Fernando González-Costas (European Union), presented an update on the status of the Precautionary Approach Framework (PAF) reference points (RPs) for the stocks for which the Scientific Council provides advice. The steps and methods for estimating the RPs needed to implement the PAF (Table 1) were discussed in agenda items 3 and 5.

Table 1. Precautionary Approach Framework (PAF) reference points (RPs) and the default values approved by the Commission.

PAF RPs	F limit (F_{lim})	F target (F_{target})	B trigger ($B_{trigger}$)	B limit (B_{lim})
Reference Point	F_{msy}	$0.85*F_{msy}$	$0.75*B_{msy}$	$0.3*B_{msy}$

3. Possible methods for estimating reference points.

a) NAFO SCS Doc. 23/07: PA-WG Report

The PA-WG Chair summarized the proposed methods for estimating the PAF reference points that were discussed in the 2023 PA-WG meeting (SCS Doc. 23/07).

b) NAFO SCS Doc. 04/12: Study Group on Limit Reference Points Report

The PA-WG Chair summarized the proposed options for establishing reference points that were discussed in the Study Group on Limit Reference Points that took place in 2004 (SCS Doc. 04/12).

From these two presentations, the Scientific Council approved a list of ranking methods to estimate the reference points needed to apply the revised PAF by the Designated Experts (DEs) (Appendix III).

4. ICES Reference Points estimation methods for data poor stocks.

José De Oliveira (United Kingdom) presented an update on the International Council for the Exploration of the Sea (ICES) technical guidance for harvest control rules (HCRs) for stocks categories 2 and 3 and an explanation of the reference points for data-limited stocks in ICES. The presentation provided additional information

relevant to the discussions for the NAFO stocks, including how ICES produce advice on stocks assessed with survey data and catch information only.

5. Discussion of how to proceed to estimate the Reference Points necessary to implement the new Precautionary Approach Framework in all NAFO stocks.

The PA-WG Chair, Fernando González-Costas (European Union), highlighted the potential next steps for moving the work forward, including developing reference points as stocks undergo full assessments or holding a reference point workshop. Although the benefits from a reference point workshop were desirable, due to workload constraints of the Scientific Council, it was agreed that the Designated Experts (DEs) for the stocks that are scheduled to undergo a full assessment in a given year would work towards the development of reference points that can be used in the revised PAF that year, noting that if a DE wanted to present work ahead of schedule, they would be welcome to do so. The stocks that are scheduled for a full assessment in 2025 are 3M cod, 3LNO yellowtail flounder, 3O redfish, 3NOPs white hake, 2+3KLMNO Greenland halibut (MSE), 3+4 northern shortfin squid, and 3LNO northern shrimp. To these should be added the stock included in the coastal States requests. All of them should have at least a proxy of the RPs needed for applying the revised PAF by June 2025 except the 2+3KLMNO Greenland halibut (that is subject to MSE), the 3+4 northern shortfin squid and the 3LNO northern shrimp (that will be assessed in September 2025). It was agreed that the DEs should try to use different methods to estimate their population reference points based on available data and knowledge and taking as a guide, the ranking of methods proposed by the Scientific Council, as indicated in Appendix III. It was noted that in cases where the estimation could not be direct, DEs would be encouraged to estimate different proxies to check their robustness, and that methods outside of those outlined in Appendix III can be implemented if considered appropriate.

The estimates of the reference points for each stock will be presented at a meeting of the Scientific Council prior to the June meeting for approval of the final values by the Scientific Council. For the stocks that are scheduled for a full assessment in 2025, it was agreed to schedule a two-day meeting of the PA-WG and the Scientific Council to review and agree upon the proposed reference points in early May 2025, potentially the same week as the STACREC Data Surveys meeting.

The group also discussed how to address the advice for stocks that are assessed as part of the coastal States requests, and whether or not these would be completed using the revised NAFO PAF. It was noted that the wording of some of the coastal States requests usually includes reference to the NAFO PAF when requested, and that the Scientific Council would consider the reference points for those stocks based on the specific requests.

6. Other matters

a) Climate Change Consultancy

The Scientific Council Chair, Diana González-Troncoso, highlighted the discussions from the NAFO Annual Meeting in relation to the climate change consultancy following the receipt of the voluntary contribution from the United States of America (SCS Doc. 24/19). It was agreed to use two NAFO stocks (one from the Grand Banks (Divisions 3LNO) and one from the Flemish Cap (Division 3M)) as case studies, and that the consultants will incorporate climate change indicators as covariates in their assessments. This will assist in climate change being considered for incorporation in future advice. The Scientific Council Chair noted previous discussions at the 2024 September Scientific Council meeting on the specific stocks to be selected for the consultancy, noting that the discussions were for 3M cod and 3LNO yellowtail flounder, as these stocks are scheduled for a full assessment in June 2025. It was noted that there has been some work completed already on the impacts of climate change on 3LNO yellowtail, and that the latest data available for the stock is from 2022 (since the 2025 assessment data will not be ready in time for the consultancy), with increased uncertainty as a result of missing survey indices in the terminal years. As such, the Scientific Council agreed that the consultant should focus on 3M cod and 3NO witch flounder using the data from the latest approved assessment. The focus of 3NO witch flounder will give Scientific Council the opportunity to gain further insight in an area that has not previously been explored for this stock.

7. Adjournment

The meeting adjourned at 12:50 hours.

APPENDIX I. LIST OF PARTICIPANTS, DECEMBER 2024

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APPENDIX II. AGENDA

NAFO Scientific Council (SC) and Precautionary Approach Working Group (PA-WG)

5th December 2024 (9:00-13:00 Halifax time), by WebEx

Chairs: Diana González-Troncoso (SC) and Fernando González-Costas (PA-WG)

Agenda

1. Opening.
   a) Appointment of Rapporteur.
   b) Adoption of Agenda.
2. Current situation of NAFO stocks in relation to the Reference Points of the new Precautionary Approach Framework.
3. Possible methods for estimating reference points.
   a) NAFO SCS Doc. 23/07: PA-WG Report
   b) NAFO SCS Doc. 04/12: Study Group on Limit Reference Points Report
4. ICES Reference Points estimation methods for data poor stocks.
5. Discussion of how to proceed to estimate the Reference Points necessary to implement the new Precautionary Approach Framework in all NAFO stocks.
6. Other matters.
   a) Climate Change Consultancy
7. Adjournment.

APPENDIX III. PROPOSED OPTIONS FOR ESTIMATING THE RPS RANKED

Proposed Options for F_{msy} ($F_{lim}=F_{msy}$ and $F_{target}=0.85*F_{msy}$)

1. Direct estimate of F_{msy}
    a. from age-based models
        i. directly available from age based assessment models
        ii. post hoc calculation of stock recruit relation and other life history parameters,
        iii. simulation of F levels from assessment models
    b. from production models with informative series of catch and indices, if age or length-based analysis is not possible
    c. from production analysis of stock biomass estimates (e.g. Jacobson *et al.*, 2002)
2. %Maximum Spawning Potential, depending on life history
    a. $F_{35\text{-}40\%}$ for stocks with moderate productivity (e.g., high fecundity, ~20 year longevity; cod, plaice)
    b. $F_{50\%}$ for stocks with relatively low productivity (e.g., low fecundity, ~50 year longevity; redfish)
    c. $\sim F_{30\%}$ for stocks with relatively high productivity (e.g., high fecundity, ~10 year longevity)
3. Yield per Recruit for data–limited stocks
    a. $F_{0.1}$ for stocks with moderate productivity and uncertain spawning potential (F_{max} is not a reliable proxy for F_{msy})
4. Historical proxies (if information is insufficient for #1-3)
    a. F during periods of relatively high and stable stock size
    b. exploitation ratio (catch/survey biomass) during periods of relatively high stable stock size

Proposed Options for B_{msy} ($B_{trigger}=80\%B_{msy}$ and $B_{lim}=30\%B_{msy}$)

1. Direct estimate of B_{msy}
    a. from age-based analysis with well-defined stock-recruit relationship
    b. from production models with informative series of catch and indices, if age or length-based analysis is not possible
    c. from production analysis of stock biomass estimates (Jacobson *et al.*, 2002)
2. %Maximum Spawning Potential, depending on life history
    a. $SSB_{F35\text{-}40\%}$ ($SPR*R$) for stocks with moderate productivity (e.g., high fecundity, ~20 year longevity; cod, plaice)
    b. $SSB_{F50\%}$ for stocks with relatively low productivity (e.g., low fecundity, ~50 year longevity; redfish)
    c. $SSB_{\sim F30\%}$ for stocks with relatively high productivity (e.g., high fecundity, ~10 year longevity)
3. Yield per Recruit for data–limited stocks
    a. $SSB_{F0.1}$ for stocks with moderate productivity and uncertain spawning potential (F_{max} is not a reliable proxy for F_{msy})
4. Historical proxies (if information is insufficient for #1-3)
    a. stock size during periods of relatively high and stable stock size
    b. stock index during periods of relatively high stable stock size

Proposed Options for B_{lim}

1. Based on stock-recruitment information

   a. point of recruitment impairment (break point of segmented regression, if there is contrast in stock-recruit estimates and a break point is clearly defined)
   b. based on the lowest *SSB* where large recruitment is observed
2. $B_{recovery}$ (lowest biomass from which the stock has recovered) for stocks that have evidence of recovery and there is no reliable stock-recruit information
3. 30%B_{msy} (produces ~50%*MSY*) if B_{msy} is well estimated by a logistic production model
4. %B_0 based on life history of the stock
   a. 10%B_0 for moderately productive stocks
   b. 25%B_0 for less productive stocks

Reference:

Jacobson LD, SX Cadrin & JR Weinberg. 2002. *Tools for estimating surplus production and FMSY in any stock assessment model*. North American Journal of Fisheries Management 22: 326-338.